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Electric Light & Power

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Send research dues directly to EPRI, says EEI board

SCOTTSDALE, AR—The Edison Electric Institute Board of Directors has voted to recommend to its member companies that they pay their Electric Power Research Institute dues directly to the institute and no longer use EEI as an administrative conduit.

The board action comes as a direct result of a public challenge by the Environmental Action Foundation to the EEI practice of collecting EPRI dues before passing them on to the institute. EAF charged that EEI has been able to secure and keep for its own purposes from $14 to $19 million in interest payments since the practice began in 1972. The group called upon EEI to stop this "skimming," and to turn over to the research institute all the interest it had earned from EPRI funds over the past decade or so.

Although the EEI board has voted to recommend that EPRI collect its future dues without institute help, it did not address the issue of returning the interest money it has already collected. EEI, therefore does not plan to refund the money, an institute spokesperson said.

The EEI source also vehemently denied the Environmental Action Foundation's calculation that the institute had collected between $14 to $19 million over the past 10 years. This figure was inaccurately arrived at, EEI maintains, by simply multiplying the current estimated interest figure of about $1.6 million by 10. The growing EPRI budget over the years makes the calculated $14 to $19 million figure too high, EEI says.

No EEI estimate

The institute itself, however, had no estimate on how much interest income it has collected over the period.

"It is disturbing to both consumers and regulators that funds collected from consumers for research by another organization have apparently been used to support the lobbying and advocacy functions of EEI," EAF research coordinator Richard E. Morgan said in a November 25, 1984 letter to EEI president William McCollam, Jr.

An EAF press release announcing Morgan's letter to McCollam estimated EEI's annual costs of handling EPRI funds at $14,000.

In a recent rate hearing of the Wisconsin Electric Power Company before the state's Public Service Commission, EEI's Dr. Douglas Bauer acknowledged that the current annual EPRI interest income, as a percentage of EPRI dues payments, would fall between $1.4 million and $1.8 million. Bauer also stated that EEI administrative costs for handling EPRI dues would be "substantially less than the $1.4 to $1.8 million."

In a December 31, 1984 letter responding to the EAF charges—a letter sent to all state utility commissioners—EEI's McCollam explained that EEI, as a matter of good business practice, invests all surplus funds on a short-term basis. The interest from these investments, he said, is combined with interest from longer term investments and togeth-

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EEI sends $10.9 million to TMI-2 cleanup fund

WASHINGTON, D.C.—In late December, the Edison Electric Institute (EEI) sent its first contribution from investor-owned utilities to the cleanup of the damaged Three Mile Island Unit-2.

EEI spokesperson Gloria Dittus said the institute sent a check to the fund for approximately $10.9 million.

The EEI board adopted a resolution in January 1983 to collect $150 million ($25 million a year for six years) in voluntary contributions from investor-owned utilities.

However, as of late 1984, only $66 million ($11 million per year) had been pledged by 33 utilities for the clean-up fund. That left $84 million still to be found.

Compromise plan

The EEI Board of Directors recently devised a two-part compromise plan whereby six utilities in Pennsylvania and New Jersey will make up the $84 million shortfall over six years by diverting money that would have been sent to the Electric Power Research Institute to the TMI-2 fund.

EEI President William McCollam said, "These two parts are the 'industry voluntary program' and the program of supplemental research and developmental grants from six Pennsylvania and New Jersey utility companies. The supplementary program assures that the full level of $25 million per year for six years, for a total of $150 million, will be available for the cleanup effort."

The six utilities are General Public Utilities, Pennsylvania Power & Light, Duquesne Light, Philadelphia Electric, Public Service Electric & Gas and Rockland Electric. Atlantic City Electric, while not an EPRI member, will participate in the supplemental plan.

Money for the supplementary program will be provided from funds that would have otherwise been paid as EPRI dues, according to EPRI. In 1985, the supplementary program will be paying $14 million to the cleanup in quarterly installments.

Three will leave

According to spokespersons from EPRI and EEI, three of the six utilities will drop out of EPRI this year and contribute to the fund, while the other three remain EPRI members. Then, in 1986, their roles will be reversed. At press time, it had not been determined which utilities would be dropping out of EPRI this year.

"The mix of funds from these two sources for future years may vary as participation in the industry voluntary program is increased," said McCollam.

EEI hopes that more utilities will join the 33 that already have pledged to support the voluntary program.

EPRI spokesman Dan Van Atta said that even though the utilities leaving the organization to participate in the program will "technically" be non-members, EPRI will still retain its relationships with the utilities.

EPRI Senior Vice President of Finance and Administration David Saxe said that the utilities in the supplementary program may still receive free EPRI publications and some of the groups' services, but will not be able to nominate members to the EPRI technical advisory committees during their participation in the TMI funding plan.

GPU said that contributions to the

Continued on page 6

Shoreham loads fuel despite major license obstacles

BROOKHAVEN, N.Y.—Long Island Lighting has been granted authorization to load fuel at its beleaguered Shoreham nuclear plant despite serious obstacles that continue to cast doubt on whether the plant will ever operate commercially.

At press time the company said it expected to complete fuel loading by February 1.

On December 7, 1984 the Nuclear Regulatory Commission okayed the company's request to load fuel and conduct precriticality testing at Shoreham. The NRC also approved cold criticality testing. These authorized activities represent the first two phases of a four-phase nuclear plant startup regime. Phases 3 and 4, which include low power testing to one and five percent of rated power, respectively, are still under review by the federal regulatory commission.

The major hurdle facing Lilco in getting Shoreham on-line continues to be the refusal of Suffolk County to approve an emergency evacuation plan. The county has resolutely contended that in the case of a serious accident at Shoreham it would be impossible to safely evacuate or otherwise protect the public.

The county is joined by the Governor of the state in resisting the approval of the emergency evacuation plan.

NRC's decision called political

In a mid-summer memorandum and order, the NRC stated that "The commission found that 10CFR50.47 (D) established unqualified authorization [for it] to issue a low-power license without the need for a predicitive finding . . .that a full power license will ever issue."

In short, the commission believes it has the statutory authority to issue a low-power license without concerning itself with whether Lilco will ever qualify for a full power license. On December 7 it implemented that authority.

Some important segments of the nuclear community don't agree with

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Fuel loading has begun at the Shoreham nuclear plant, even though serious question's linger over full power license qualifications

Foreign Power Briefs

● **Solenergy Corporation** said it signed a letter of intent with the Tianjin, China No. 2 semiconductor manufacturing plant to make solar cells for the plant using material supplied by the Tianjin concern. Solenergy and Tianjin also agreed to study the feasibility of forming a joint venture manufacturing facilitiy to manufacture and market solar cell modules on a world-wide basis.

● **Ontario Hydro** reports that its customers earned over $13 million in November from the sale of 806.4 million-kWh of electricity to the United States. The utility said November export earnings were 25 percent higher than in the same month in 1983.

● **Westinghouse Nuclear International Europe** said it will build a $5 million European Service Center near Brussels, Belgium to provide maintenance and repair for electric generating plants in Europe. Westinghouse Nuclear International President Carlo L. Caso said the company will be able to serve its European customers more quickly and responsively. He siad the center, which should be completed by late 1985, will be positioned to service most of the plants in Europe within less than a one-day drive.

● **Delegations from China and Argentina** will be visiting the U.S. in early 1985 to learn more about the potential uses of wind energy, according to the U.S. Department of Commerce. The group from China will visit in late February or early March and will be composed of persons from the province of Inner Mongolia. The Argentine delegation will visit sometime early this year. The Commerce Dept. said the Argentines are interested in talking with wind system manufacturers and visiting wind research centers.

HL&P audit finds potential savings

HOUSTON—An independent management audit of Houston Lighting & Power Company has discovered potential cost savings of $24 million, said the utility.

Arthur Young & Company, who conducted the audit, said that it found HL&P's organizational structure and decision making processes to be well-managed and effective.

A new Texas Public Utilities Commission law requires all public utilities to undergo a management audit. The report to HL&P contained 83 recommendations.

HL&P President Don Sykora said, "HL&P is preparing detailed action plans to address each of these recommendations and has indicated to the PUC that it will implement all recommendations where benefits exceed costs."

Said Arthur Young in its report, "An effective electric utility manages critical business issues, controls construction costs and secures a sufficient supply of fuel at reasonable prices. HL&P meets these criteria and in our judgement is effectively managing the essential, core functions described above. The executive management is sound and in a continuing state of improvement."

The audit team also said it found HL&P's South Texas Nuclear Project to be well-managed. "The STP schedule is an aggressive but achievable one. STP methods for planning and control are adequate in light of project needs," said the auditors. "They incorporate state-of-the-art technology in project management and software."

The audit will prove to be helpful to HL&P management and our customers, said Sykora.

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A new, cheap air pollution control system that simultaneously reduced sulfur dioxide and nitrogen oxide emissions is being demonstrated this year.G 30

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Preliminary sites picked for waste depository

WASHINGTON, D.C.—Sites in Nevada, Texas and Washington have been identified by the U.S. Department of Energy (DOE) as possible locations for the country's first permanent geologic repository for high-level radioactive waste.

DOE recommended in December that further site characterization be conducted at Yucca Mountain, Nevada (tuff); Deaf Smith, Texas (bedded salt); and Hanford, Washington (basalt flows). The host rock of each site is in parentheses.

Site characterization includes construction of exploratory shafts to depths of a proposed repository (approximately 1,000-4,000 ft underground), in order that data can be collected and analyzed.

Advantageous combination

In a draft environmental assessment of the sites, DOE said it "...believes that the Deaf Smith, the Hanford, and the Yucca Mountain sites offer, on balance, the most advantageous combination of characteristics and conditions for the successful development of a repository and should therefore be recommended for characterization."

The recommendations are being made because of requirements of the Nuclear Waste Policy Act of 1982. DOE identified nine potential sites for the repository in Feb. 1983 and then had to nominate five of those sites for site characterization. The first repository is scheduled to begin operation in 1998.

In addition to the three recommended sites, DOE said other potentially acceptable sites are located in Richton Dome, Mississippi (domal salt) and Davis Canyon in Utah (bedded salt).

The four sites that weren't nominated from the original nine are Vacherie Dome in Louisiana (domal salt), Cypress Creek Dome in Mississippi (domal salt), Swisher County in Texas (bedded salt), and Lavender Canyon in Utah (bedded salt).

DOE said the proposed geologic repository will take up about 2000 acres at a depth of 4,000 feet. Surface facilities to handle and process the waste will occupy approximately 400 acres. After operating for between 25-30 years, DOE said the site will be closed and sealed.

Based on current nuclear generating capacity, DOE estimates that there will be 50,000 metric tons of spent fuel in the U.S. by the year 2000.

Assessments available

Draft environmental assessments for all nine sites are available for a 90-day period that began in December. DOE has scheduled public hearings in each of the states where recommended sites are located.

After the hearings are completed and all public comment is received the department will issue final environmental assessments.

The site characterization process is expected to take four or five years. DOE will recommend one site to the President, which he has the option of recommending to Congress in 1990.

DOE explained that the host state may issue a notice of disapproval that can be overridden only by a Congressional resolution. If the resolution isn't passed, the President must submit another site nomination to Congress within 12 months.

Requests for copies of the draft environmental assessments can be made by calling (800) 858-1600.

NARUC subcommittee

In a related matter, the National Association of Regulatory Utility Commissioners (NARUC) voted to form a standing Subcommittee on Nuclear Wasted Disposal of the Committee on Electricity at its recent annual convention in Los Angeles.

NARUC said the subcommittee will be responsible for providing DOE and Congress "its unique expertise in matters of finance, hearing processes and utility regulation so as to improve the (waste disposal) program and assure that ratepayers' funds to support the program are used effectively...".

Also, the NARUC subcommittee will be responsible for providing all regulatory commissioners information on the waste program.

WPPSS-2 enters service

Washington Public Power Supply System's Plant-2 in Washington began commercial operation December 13. The 1,100 MW General Electric boiling water reactor is not scheduled for an outage until April. The plant is supplying power to the Bonneville Power Administration.

Four new nuclear plants enter commercial service

WASHINGTON—Four new nuclear power plants started commercial operation in 1984: South Carolina Electric & Gas Co.'s Summer unit 1, Duke Power Co.'s McGuire unit 2, Southern California Edison's San Onofre unit 3, and Washington Public Power Supply's Plant 2.

That brought the total number of operable nuclear plants to 88 and there are 39 more with construction permits. "This was the year that many logjams in nulcear licensing were finally broken," said Carl Walske, president of the Atomic Industrial Forum. In addition to the four plants going commercial, five more received full-power licenses in 1984 and are nearing commercial operation, probably in 1985.

"It is possible that we are beginning to see the end of lean times," said Walske.

AIF predicted that the commercial units in 1984 accounted for 14 percent of U.S. electrical output, producing a nuclear electricity record of 325 billion kWh. Nuclear electricity output climbed 13 percent in 1984 while overall electricity production was up four percent.

In its annual year-end review of the nuclear industry the trade association noted that an AIF Study Group on the Economics of Coal and Nuclear Power reported in 1984 that future nuclear electricity can be cheaper than coal-produced electricity if project construction periods are no more than eight years.

Construction durations averaged 11 years for the plants going commercial in 1984 as shown in the table.

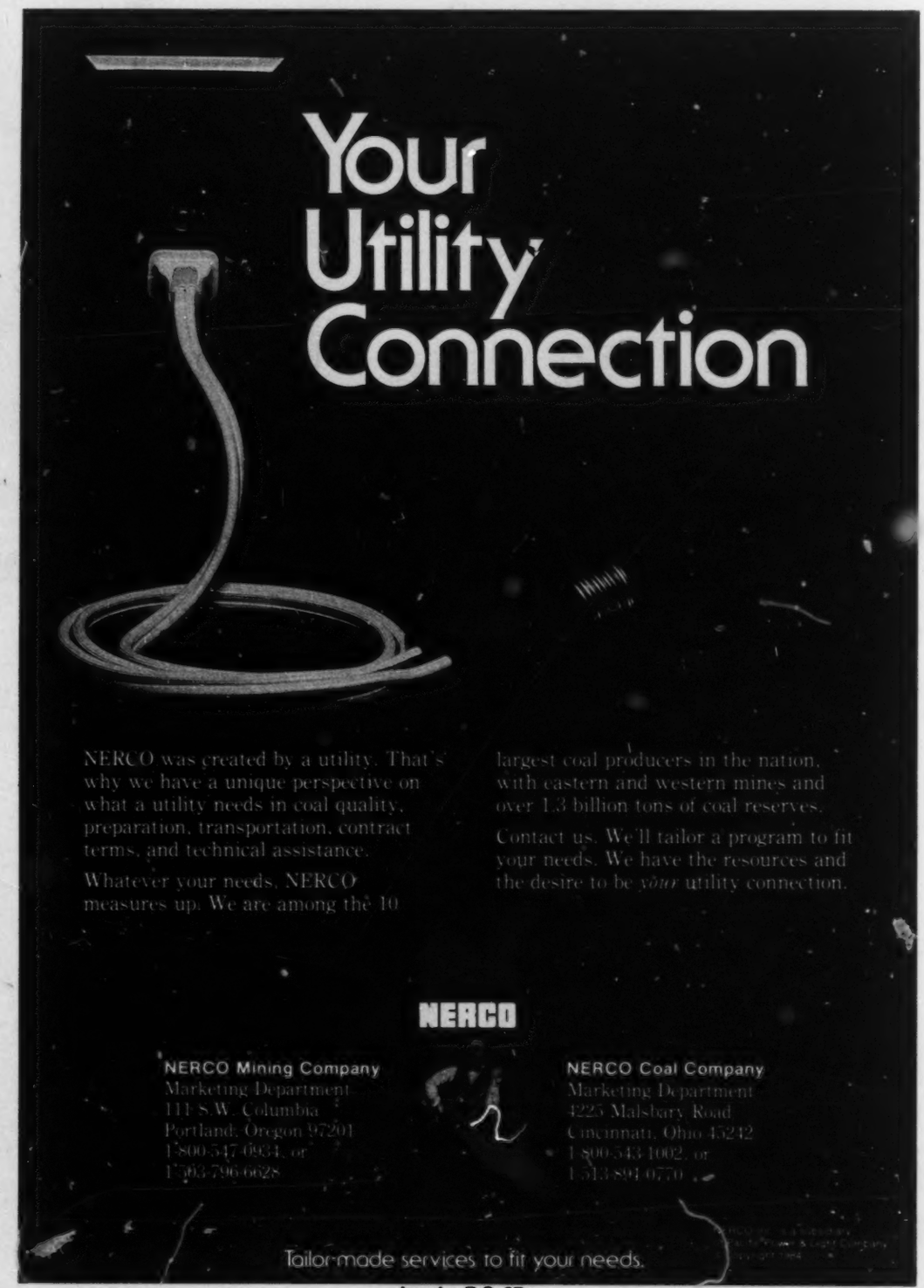
AIF said shorter construction times will become common with a "more stable licensing environment."

Said Walske, "Given the considerable progress the industry has made in improving its operations, we expect to see a move toward greater stability in the regulatory process. This is a prerequisite to orders for additional nuclear plants."

U.S. NUCLEAR PLANTS ENTERING COMMERCIAL OPERATION IN 1984

Plant	Size-MWe	Type	Utility	Const. permit	Operating license	Commercial operation	Construction duration
Plant 2	1,100	BWR	Washington Public Power Supply	3-73	12-83	12-84	11 yr. 9 mos.
Summer 1	900	PWR	S. Carolina Electric & Gas S. Carolina Public Service Auth.	3-73	11-82	1-84	10 yr. 10 mos.
McGuire 2	1,180	PWR	Duke Power	2-73	5-83	3-84	11 yr. 1 mo.
San Onofre 3	1,100	PWR	Southern California Edison	10-73	11-82	4-84	11 yr. 6 mos.

Source: WPPSS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Coal industry predicts '85 consumption will rise

WASHINGTON—Consumption of coal in the U.S. is expected to rise 2.3 percent in 1985 to a record 805 million tons, according to the National Coal Association, trade association of the nation's coal producers.

Coal industry production, however, will decline by 1.1 percent as customers—chiefly utilities—work down their inventories. NCA says coal users built up inventories in anticipation of a miners' strike last fall.

NCA forecasts that utilities, which account for three-fourths of coal consumption in the U.S., will boost consumption in 1985 to 677 million tons, from 1984's 660 million. NCA expects electricity sales to rise 2.5 percent in 1985 and coal to account for 55 percent of electricity production.

Nuclear ambiguity . . .

from page 14

mal procedure in place regarding nuclear power plant cancellations. According to Thomas Novak, assistant director for licensing, a lot has to do with individual company situations and whether or not the nuclear utility is in on-going proceedings when it decides to terminate its nuclear plant. In most cases, he said, the construction permits are revoked during the hearing process.

Absent an on-going hearing, some kind of formal notification to the NRC is necessary to change the company's license status. When Cincinnati Gas & Electric announced it was cancelling its Zimmer nuclear plant, it explicitly declared "We will be filing with the Atomic Safety and Licensing Board, in the near future, the appropriate legal papers for withdrawal of the application" for an operating license.

Ultimately, for the termination process to be official, an applicant's construction permit or operating license has to be revoked by the NRC. But short of this action, it is often very difficult to discern not only the utility's long-range intention but the NRC's actual license status of the plant at issue.

NOTE

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New financing accord may brighten Seabrook outlook

'Measure of confidence' restored in financial integrity

MANCHESTER, NH—Public Service of New Hampshire, major owner in the troubled Seabrook-1 nuclear plant, announced in late January that it had agreed to a new financing plan aimed at enhancing its ability to complete the nuclear unit.

Merrill Lynch, who was earlier retained by the Seabrook joint owners group to draft and implement a three-phase financing plan for PSNH, has now been joined by Drexel Burnham Lambert and Kidder Peabody. All three underwriters will revise the third step in the so-called Newbrook financing plan and together will sell securities under what is seen to be a more traditional scheme.

"Progress at the Seabrook station [over the past several months], and the successful completion of the first two phases of the plan by December 6, 1984, have begun to restore a measure of confidence in the financial integrity of the company," the underwriters testified before the New Hampshire Public Utilities Commission recently. "Accordingly, a more conventional structure now appears feasible for the third phase of the plan."

The three underwriters envision issuing two types of securities: deferred interest bonds that will be issued directly by PSNH, and, to the extent possible, tax-exempt pollution control revenue bonds issued by the Industrial Development Authority of New Hampshire. Both types of securities will be secured by a third mortgage on the PSNH properties.

PSNH currently estimates that it will need $332.6 million for its share of Seabrook completion. Under a previous proposal, a $665 million financing was contemplated where PSNH would have had to raise the first two years' interest at the time of the initial public offering. The new deferred interest feature allows a reduction of about $250 million in prefinanced interest.

There is also a corresponding reduction in the amount of cash the company must raise: the total face amount of the financing is reduced from $665 million to $525 million, a reduction of $140 million. Also saved is the interest on this $140 million over the remaining eight-year life of the financing.

According to PSNH's yearly statement of earnings, as of November 1984, total electric revenues for the company rose 15.5 percent over 1983,

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New operating record for Oconee 2

Duke Power Company's Oconee 2 nuclear unit has set a new world record for continuous operation, surpassing the old record of 417 days on January 29 and as *EL&P* was going to press was approaching its goal of 441 days before being brought down for refueling on February 21. The 860-Mw Babcock & Wilcox unit posted a 100 percent availability factor and a 96.6 percent capacity factor for the entire year of 1984. See page 6 for other coverage.

Kwh sales per real GNP: the slide continues

WASHINGTON—Even though electricity demand increased measurably in 1984, it did not keep pace with the domestic growth in the gross national product (GNP). Last year, therefore, saw a continuation of declining electricity generation per constant (1972) dollar of GNP. The trend began in 1976, with 1980 as the only exception (see accompanying graph).

Specifically, electricity generation rose from 2,310 billion kilowatt-hours in 1983 to 2,415 billion kilowatt-hours last year, or an increase of 4.5 percent. Real, or inflation adjusted GNP (in 1972 dollars), rose from $1,534.7 billion in 1983 to 1,637.9 billion in 1984, a 6.7 increase.

The accompanying chart shows the ratios of electricity generation to GNP since 1976. It can be seen that 1984 represents the lowest ratio recorded since the downward trend began in 1976.

Helping to moderate electricity growth last year was the fact that weather conditions returned to more normal levels. Electricity growth was stimulated in 1983 by an extremely cold winter and an unusually warm summer.

However, according to Energy Information Administration economist Colleen Cornett, even if weather last year had approximated the weather a year earlier, the ratio of electricity generation to GNP would still have declined relative to 1983.

In the electric utility industry, the kWh/GNP measure has long been a key determinant in predictive efforts of future demand. In fact, according to a recent report by the Energy and Environmental Policy Center at Harvard University, economic growth was shown to be the most important determinant of electric demand. According to the study, only about 30 percent of the recent slowdown in electricity demand is attributable to price effects. The rest is the result of poor economic performance.

A recent report by the Congressional Research Service notes that the argument among experts over electricity growth and gross national product is not over whether a relationship exists, but over the nature of that relationship.

"These arguments are of more than academic interest," notes the CRS report, *Gold at the End of the Rainbow: A Perspective on the Future of the Electric Utility Industry*. The report points out that a demand forecast

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Administration's 1986 budget request cuts energy spending

WASHINGTON—Spending by the U.S. Dept. of Energy on Energy R&D got only a light trimming in the fiscal 1986 budget proposed by the Reagan Administration. In the past the administration has proposed huge cuts in DOE's energy funds only to have Congress restore most of the cuts. This year the requested cuts are more modest.

The total DOE budget does contribute to cutting the deficit with proposed spending down about $2 billion, compared to outlays in the current fiscal year. However, that reduction results largely from the elimination of spending on the Strategic Petroleum Reserve. The administration reported that there is oil in storage equivalent to 108 days of imports at the projected 1985 import rate, allowing an "indefinite moratorium" on further additions.

There isn't much change in the rest of the DOE budget, with slight increases in the defense and nuclear waste areas offsetting slight decreases in areas such as energy research and development.

The total proposed DOE budget for fiscal 1986 is $12.5 billion, down from $14.3 billion in the current year. The overall proposal for government spending is a 1.5 percent increase to $974 billion, an increase so small compared to increases in the past decade that it is, in effect, a "freeze," according to the administration.

To put the DOE budget in long-term perspective, it should be compared to the budget projected by Carter administration for fiscal 1982, which would have been the first year of Carter's second term had he been re-elected. The Carter DOE would have spent $16.5 billion in 1982, of which more than $3 billion would have gone to energy research.

EL&P readers will recall that the newly elected Reagan administration wanted to completely eliminate DOE and proposed to slash its budget drastically in the meantime. Total spending was to be cut nearly $3 billion in the first year, with further large cuts slated for future years until elimination of the department was achieved.

The administration has not been too successful in getting what it wants at DOE. The idea of elimination is still alive, but just barely. Spending has been cut, but not nearly as much as hoped for.

Congress has fought a fairly successful holding action to keep its favorite DOE energy programs alive (while successfully killing some favorite administration energy projects such as the Clinch River Breeder Reactor.) In the energy R&D area, spending is still about half what it was during the peak Carter years. The administration wants to spend about $1.6 billion on energy R&D next fiscal year, down from about $1.8 billion in the current year. Specific areas:

- Spending on fossil R&D is projected at $242 million next year, down from $347 in 1985. Historically, this is one of the biggest losers in the Reagan DOE—Carter's DOE planned to spend $1.6 billion on fossil-related R&D in fiscal 1982.
- Nuclear R&D is projected to get $372 million, down from $416 million this year and $722 million in '82.
- Solar R&D spending is set at $148

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Foreign Power Briefs

● **Four African countries** will be receiving the help of a Michigan electrical engineer in examining alternatives for more efficient electrical power distribution systems. The Michigan Dept. of Commerce and the Michigan Energy and Resource and Research Association selected William Moylan of Moylan Engineering Associates, Inc. to examine the distribution systems of Nigeria, Cameroon, Ivory Coast and Gabon. Both Michigan groups hope the venture will result in new business opportunities for state companies in Africa. All four countries, which rely mainly on hydropower, face a reduction in economic development due to a long-term drought that has hampered power production and distribution.

● **A report by France's Ministry of Industrial Deployment and Foreign Trade** concludes that new nuclear plants entering service in 1992 would produce cheaper electricity than a coal-fired plant starting up at the same time. The Atomic Industrial Forum said data from the report shows that electricity from a 1,300 MW nuclear plant would cost 22-23.5 centimes (2.4 cents) per kilowatt-hour. The report said it would cost 28-36.5 centimes for a 600 MW coal plant and 31-39 centimes if the plant was equipped with scrubbers. According to the French study, the nuclear plant would retain its advantage over a coal station, if it operated at a capacity factor more than 18.8 percent.

● **The People's Republic of China** and Flow Industries of Kent, WA have reached an agreement similar to a letter of intent for the construction of a $12 million windfarm, according to the American Wind Energy Association (AWEA). The group reports that FloWind has had extensive discussions with the Chinese about the project. Current plans call for 40 turbines to be installed at a site that has not been chosen yet. FloWind told AWEA that the wind machines could supply enough electricity for 160,000 homes.

● **Nuclear reactors in Western Europe** have been operating at an average annual capacity factor of ten percent or more above U.S. reactors in recent years, according to a new report. Jacques Le Cleq of Electricite de France, Hermann Kraemer of Nordwestdeutsche Kraftwerke and Franz Marcus of the Nordic Liaison Committee for Atomic Energy presented their paper at the American Nuclear Society winter meeting. The authors said that West European average annual capacity factors since 1976 have been between 68 and 78 percent, while U.S. capacity factors have hovered between 57 and 69 percent.

● **Pravda** has reported that Zaporozhe-1, a 1,000 MWe pressurized water reactor, went critical in early winter. The plant is the first of the Soviet Union's planned six 1,000 MWe PWRs at the Zaporozhe site in the Ukraine.

● **Switzerland and Egypt** have agreed to cooperate in the peaceful utilization of nuclear energy, according to *Nuclear Engineering International*. The magazine said it is the first agreement Switzerland has signed with a Third World country. According to the publication, China and India also have signed a similar agreement.

● **The People's Republic of China** has selected Stone & Webster Engineering Corp., to evaluate a 490-ft-high concrete arch dam that will be part of a major hydroelectric facility on the Second Songhua River in Jilin Province. Stone & Webster said it will develop computer models to assess how the dam will behave under different loading conditions.

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New Seabrook financing . . . from page 1

while total operating expenses rose 13.3 percent. Net income was up 7.6 percent with allowance for funds used during construction, dropping from 93.3 percent of net income to 92.9 percent.

At a regular meeting on January 17, in compliance with the New Hampshire PUC order, the company voted to omit dividends for both common and preferred stock that would have been payable on February 15, 1985. It also voted to omit a sinking fund payment on four series of perferred stock scheduled for May 15.

Robert J. Harrison, PSNH president and chief executive officer, said that notwithstanding the company's recently-completed $425 million financing, cash flow remains tight.

"Our recent successful financing is intended to satisfy the company's external cash needs, excluding its Seabrook station obligations, until Seabrook-1 is operating," Harrison said. "An additional financing will be necessary to satisfy our Seabrook obligations."

In a related development, New Hampshire Yankee received approval January 31 from the Nuclear Regulatory Commission to assume primary responsibility for the construction of Seabrook.

According to New Hampshire Yankee chairman Edward A. Brown, the NRC okay "is a major step toward establishing New Hampshire Yankee as an individual corporation—separate from Public Service of New Hampshire."

New Hampshire Yankee was formed as a division of PSNH by the 16 joint owners of Seabrook last June. The new organization will remain a division of PSNH until it receives final NRC approval as a separate corporation.

New Hampshire Yankee receives its direction from the executive committee of the project's joint owners.

"These factors, coupled with a shorter repayment term, will provide significant savings on a present value basis," PSNH testimony filed before the state PUC maintains.

Given deferred interest bonds, PSHN spokeswoman Carolyn d'Entremont said that the $525 million face value of the bonds will be discounted when sold. Because no interest will be paid for the first two years, the bonds will be sold for $340 million, a difference of $185 million. "This discount is designed to approximately equal the interest which otherwise would have accrued on the bonds during that two-year period," the PHSN testimony explains. "Interest will accrue after the two-year period and will be payable semi-annually."

The company expects that the third mortgage bonds will have maturities of between eight and 12 years and that there may be a sinking fund. And based on current market conditions, the underwriters estimate an interest rate (yield to purchaser) in the range of 19 percent to 23 percent.

There is some question whether, as a supplemental aspect of the new financing plan, the underwriters will be able to arrange the sale of pollution control revenue bonds. The company reports that if this tax-exempt financing is not feasible, the entire issue will consist of deferred interest bonds.

The underwriters say they are optimistic that they will be able to sell these discounted securities for PSNH. They cite the $425 million of debentures sold by PSNH last year and the witnessing by the financial community of construction activity increasing from zero expenditures last July to $5 million a week in December.

Further, the financial community is said to perceive the nuclear utility industry as recovering. "This new perception is reflected in higher prices in the secondary market for securities issued by most nuclear utilties," the underwriters say.

Finally, the underwriters point to the "substantial progress" of the other Seabrook joint owners in financing their shares in completing unit 1 and to the improve liquidity of PSNH.

Parsons buys Main

BOSTON—The Parsons Corporation, fourth largest engineering-construction firm in the country, has entered into an agreement to acquire C.T. Main Corporation. C.T. Main Corp., ninth largest engineer-constructor, is headquartered here, while Parsons' headquarters are located in Pasadena, CA.

Announcement of the agreement was made by C.T. Main Corporation president Paul Gorman.

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million, down from $178 this year and $530 million in '82.

● Fusion R&D is slated for $390 million next year, down from $437 million this year, but up from the $317 million planned for 1982—one of the few energy R&D areas to show a gain from the Carter era.

Spending on nuclear waste disposal activities is scheduled to increase to $1.6 billion from $1.3 billion this year. This area has increased substantially since the Carter years but part of the boost is due to fees collected from nuclear utilities under the 1982 Nuclear Waste Policy Act. The fee-supported portion of the 1986 budget is $571 million, up from $327 million this year.

Support for the federal power marketing administrations such as Bonneville is also declining. The 1986 total is $579 million, down from $667 million this year.

The federal energy picture

Two other recent publications from the Department of Energy will, with the 1986 budget proposal, provide a complete picture of the federal energy establishment at the beginning of the second term of the Reagan administration. One is the Secretary of Energy's Annual Report to Congress. It explains the Reagan Administration's rationale for shrinking the federal role in energy and describes the remaining programs in considerable detail.

The other is the Energy Information Administration's Annual Energy Outlook which projects energy trends out to the year 1990 and beyond:

● Total U.S. energy use is projected to increase 11 percent between 1985 and 1990.

● Oil consumption is expected to rise to 17.3 million barrels per day from 15.8 million this year.

● Electricity generation is projected to increase at the rate of 3.3 percent per year over the next five years. (The range is from 2.4 percent to 4.0 percent per year.) Real electricity prices are expected to decline at the rate of 0.2 percent per year.

● Coal output is expected to rise 17 percent by 1990 and 36 percent by 1995 compared to 1985 output.

Kwh sales and GNP . . . from page 1

based on statistical trends from 1947 to 1982 will be 16 percent higher by the year 1995 than a demand forecast based on statistical trends from 1973 to 1982. Both forecasts assume a 3 percent annual growth in GNP.

The CRS report states that such a large disparity between the high and low forecasts translates into a differential need for more than 100 additional large power plants at an additional cost of $175 billion.

"It should be noted that neither school of thought is postulating a decline in electricity demand," the CRS report states. "The argument is over how high the rate of increase will be."

CRS researchers note that over most of the 1949-1973 period, for every 1 percent increase in GNP there had been a 2 percent increase in electricity generation. Since 1973, however, the relationship has been close to 1:1.

"Although it is too early to define this shift as a trend, the precipitous nature of the drop over two consecutive periods (1974-1978; 1979-1983) would tend to indicate that some kind of change may be afoot," CRS researchers contend.

Prior to the early 1970s, there was an underlying growth rate resulting from the electrification of the society that was relatively impervious to the fortunes of the national economy, the CRS report notes. With electrification now largely accomplished, electric generation is seen to be more susceptible to swings in the national economy.

The electricity/GNP section of the CRS report concludes by reaffirming the "close relationship" that exists between these two parameters, adding, "The nature of that relationship appears to be evolving, and thus adds to the uncertainty facing the utility forecaster."

KWhs CONSUMED PER CONSTANT (1972) DOLLAR GNP	
1976	1.570
1977	1.551
1978	1.533
1979	1.519
1980	1.550
1981	1.518
1982	1.514
1983	1.506
1984	1.473

Source: Energy Information Administration of the Department of Energy

Los Alamos report sees shortages

A recent report by the Los Alamos National Laboratory, also noting the "strong positive association" between electricity growth and GNP, concludes that "The future growth rate in electricity demand is uncertain in part because future changes in GNP and the price of electricity are uncertain."

After interviewing 33 electric utilities representing each of the 10 federal regions, Los Alamos researchers were led to conclude that about 300 GW of new electric generating capacity will be ordered and brought on-line in the U.S. by the year 2000. Most of these additions are expected to be added near the end of the century.

Electricity consumption was projected to increase at an annual average rate of 2.9 percent per year.

Such a figure contrasts with the Department of Energy's most recent estimate of a 3.3 percent increase through 1990.

"If the capacity expansion plan of utilities reflect their demand growth projections, and if actual demand growth is consistent with our [Los Alamos] projection . . . future operating capacity may be insufficient to meet demand," states the Los Alamos report, *The Future Market for Electric Generating Capacity: A Summary of Findings*.

One of the conclusions of the Los Alamos report pertains to the economies of scale in building larger generating plants and the durability of these economies in light of usually longer lead times to construct such plants. The Congressional Research Service has recently concluded that whatever economies of scale are obtained by building larger generating plants are overwhelmed by associated financing difficulties over the longer building time.

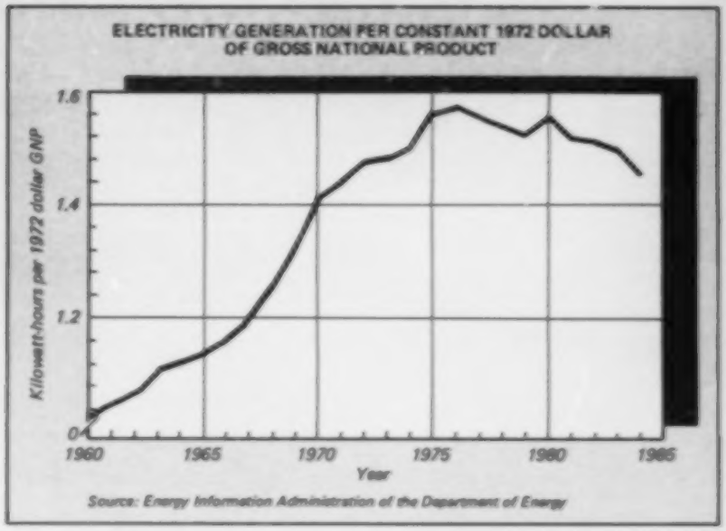
Similarly, the Los Alamos team found "There are much stronger tradeoffs between costs and leadtimes than are generally recognized."

In a study in Northern California, Los Alamos researchers found that a utility could pay at most $1,000 per kilowatt for long leadtime (15 year) generic generating units and still meet its financial goals. "The same financial objectives could be met if the plants were available at $4,000 per kilowatt with a five-year leadtime," the researchers discovered.

The analysis was repeated for a coal-dependent utility. Here researchers found that a company could pay at most $650 per kilowatt for long leadtime generic units. If such units were available that could be built in five years, the company could afford to pay as much as $2,750 per kilowatt and still maintain strong financial performance.

In both instances, reductions in the total leadtimes led to acceptable increases in "overnight costs"—those non-time-dependent costs, such as interest or cost escalation. "These results are different from the more conventional engineering-economic cost calculations based on life-cycle costs," the Los Alamos study notes.

The sample of utilities used in the Los Alamos study reflected 40 percent of investor-owned generating capacity and 51 percent of investor-owned nuclear capacity.



Source: Energy Information Administration of the Department of Energy

B&W honors Duke for Oconee 2 Record

William S. Lee, chairman and chief executive officer, Duke Power Co., (left) receives clock commemorating the world record for continuous operation by a nuclear power plant achieved by the company's Oconee 2 generating unit. Making the presentation was Walter M. Vannoy, president of Babcock & Wilcox, the supplier of the reactor. Although Oconee 2 set the world surpassed the old record of 417 consecutive days of operation on the evening of January 29, it continued to operate toward its goal of 441 consecutive days of operation before being brought down for refueling on February 21, as this issue of *EL&P* was being readied for the press.

KWhs hit new high in January

WASHINGTON, D.C.—Total electric output for the week ending January 26 reached an all-time high, according to statistics compiled by the Edison Electric Institute.

The amount of electricity distributed throughout the continental United States was 54,739 million kilowatthours, an increase of 10.4 percent over the comparable week last year.

The previous record was set in 1984 when the net output for the week ending August 11 was 54,095.

EEI says that this is the first time since 1968 that the peak had been set during a winter week.

The Southeast, Mid-Atlantic and New England regions had the largest percentage increases last week with gains of 21.1, 11.1, and 10.3, respectively.

The record output, which will be included in 1985's statistical tabulation of electricity demand and GNP growth, is largely attributable to extreme weather conditions and economic growth, EEI reports.

Electric output for the first four weeks of 1985 is up 2.1 percent over the same period in 1984.

These statistics reflect output of the entire electric utility industry, including both investor-owned and public utility entities.

Total R&D spending will hit $107 billion, says Battelle

COLUMBUS, OH—Research and development spending in the U.S is expected to reach almost $107.3 billion in 1985, according to Battelle Memorial Institute's Columbus Division.

The National Science Foundation reports that $97.0 billion was spent for R&D in 1984.

Battelle said it forecasts a real increase in R&D expenditures of 3.9 percent this year, slightly lower than the ten year average of 4.2 percent.

Industrial R&D funding, projected to increase more significantly than government support, will account for 51.3 percent of the total funding. Battelle said industrial support is expected to be $55.0 billion, up 11.4 percent from 1984.

Battelle said it projects an increase of 10.0 percent in federal support for R&D, with funding expected to be $48.7 billion. Funding by academic institutions in 1985 will be approximately $2.28 billion and other nonprofit organizations will provide slightly more than $1.3 billion, according to the institute.

The Department of Energy will account for 9.1 percent of the total federal R&D funding for 1985. Battelle said energy funds will decline for research on alternative energy sources, but not for energy programs in direct support of national defense.

Battelle said that industrial support of research is growing in fields related to electronics.